

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte STEPHEN A. RALLS and
LLOYD G. SIMONSON

Appeal No. 2001-1409
Application No. 09/044,214

ON BRIEF

Before WINTERS, SCHEINER, and GRIMES, Administrative Patent Judges.

GRIMES, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-14, all of the claims in the application. Claims 1 and 8 are representative and read as follows:

1. An immunodiagnostic assay kit for detecting semi-quantitatively in about five (5) minutes or quantitatively in about six (6) to eight (8) hours antibodies in saliva specific to a disease comprising:

Antigens specific to a disease to be identified immobilized on a solid flow-through substrate by spotting or nonspecific contact:

A blocking agent for application over the antigen on said solid substrate capable of reducing nonspecific binding;

A filter to remove particulate matter from a saliva sample suspected of containing primary antibodies specific to said antigens;

Secondary antibodies specific to said primary antibodies available for use;
and

A label or indicator capable of attaching directly to the primary antibodies or indirectly to said secondary antibodies producing a detectable signal.

8. An immunodiagnostic assay method for detecting antibodies in saliva specific to a disease comprising:

Contacting and immobilizing antigens specific to a disease with a solid flow-through substrate to form a spot or as nonspecific contact;

Blocking said solid substrate to reduce nonspecific binding;

Gathering a saliva sample suspected of containing primary antibodies to the antigens specific to a disease;

Separating particulate matter from said sample with a separating device selected from the group consisting of filters and centrifuges to form a salivary sample filtrate or supernatant;

Spotting the saliva filtrate or supernatant on to the immobilized antigen on the solid substrate;

Contacting the immobilized antigen and sample on the solid substrate with a label capable of directly attaching to the primary antibodies or indirectly attaching to secondary antibodies specific to the primary antibodies; and

Detecting and reading the intensity of the label in less than 5 minutes whereby the presence and concentration of primary antibodies in the sample are determined.

The examiner relies on the following references:

Todd et al. (Todd)	4,962,023	Oct. 9, 1990
Maes	4,965,192	Oct. 23, 1990
Brown et al. (Brown) (PCT Application)	WO 95/28642	Oct. 26, 1995

Archetti et al. (Archetti), "Detection of Foot-and-Mouth Disease Virus-Infected Cattle by Assessment of Antibody Response in Oropharyngeal Fluids," Journal of Clinical Microbiology, Vol. 33, No. 1, pp. 79-84 (1995)

Claims 1, 2, 5-9, and 12-14 stand rejected under 35 U.S.C. § 103 as obvious in view of Todd and Archetti.

Claims 3, 4, 10, and 11 stand rejected under 35 U.S.C. § 103 as obvious in view of Todd, Archetti, Brown, and Maes.

We reverse.

Background

The specification discloses "a rapid immunoassay kit and method for semi-quantitatively detecting antibodies in human saliva to antigens of disease-related microorganisms, e.g., antibodies to Mycobacterium tuberculosis." Page 1. In standard screening tests for tuberculosis, a tuberculin antigen is injected into the patient and results are read 48 to 72 hours later. Specification, pages 3-4. "To continue with the Mycobacterium tuberculosis example . . . , a major advantage is that tuberculosis screening can be done rapidly—in approximately 5 minutes—in one visit and in a non-invasive manner." Id., page 5. "The premise of this use of the assay is that individuals infected with Mycobacterium tuberculosis develop antibodies to this bacterial species which are present in their saliva and which react with mycobacterial antigens. The antibodies are then labeled and color development detected and read visually after addition of an appropriate enzymatic substrate, if required." Id.

Discussion

The claims are directed to an immunoassay method and kit. Claim 1 is representative of the kit claims. Claim 1 is directed to a kit comprising disease-specific antigens immobilized on a solid flow-through substrate, a blocking agent, a filter, secondary antibodies specific to the antibodies of interest, and a label to detect the disease-specific antibodies. Claim 8 is representative of the method claims and is directed to a method comprising the following steps: immobilizing disease-specific antigens on a solid flow-through substrate, blocking the substrate, gathering a saliva sample and separating particulate matter from the sample by filtration or centrifugation, spotting the treated saliva sample on the solid substrate, contacting the substrate with a label, and “[d]etecting and reading the intensity of the label in less than 5 minutes.”

The examiner rejected both the method claims and the kit claims as obvious in view of Todd and Archetti. In addition, the examiner rejected dependent claims 3, 4, 10, and 11 as obvious in view of Todd, Archetti, Brown, and Maes. Both rejections rely on the same combination of Todd and Archetti.

The examiner characterized Todd as teaching an immunoassay (kit and method) for detecting specific antibodies using immobilized antigen and a label, where the sample tested can be saliva. She acknowledged that Todd does not disclose a separating device (i.e., centrifuge or filter), but cited Archetti as meeting this limitation. Examiner’s Answer, pages 2-3. She concluded that it

would have been obvious to one of ordinary skill in the art at the time the invention was made to remove undesired materials from the saliva samples prior to assaying because Archetti discloses that

saliva samples were obtained by either the use of cotton swabs or the collection of free saliva following salt stimulation. A filter is a porous substance through which a liquid or gas is passed . . . in order to remove constituents such as suspended matter. The cotton balls used for obtaining the saliva samples taught by Archetti are a filter. Further, it was taught by Archetti that the saliva samples were then homogenized by adding 3-mm beads and vortexing prior to assaying and it was well known to those of ordinary skill in the art at the time the invention was made that samples should be treated prior to use in an assay in order to achieve more accurate results. Samples are commonly centrifuged, separated by a filter or collected by a filter prior to use in assays and the incorporation of a separation device, albeit a column or filter would have been an obvious addition to the kit disclosed by Todd at the time the invention was made because Archetti et al. specifically teaches [sic] the use of a filter when using saliva samples, i.e., cotton balls.

Id., pages 3-4.

Appellants argue that the cited references do not support a prima facie case of obviousness. See the Appeal Brief, pages 11-14 (emphasis in original):

TODD teach only a dipstick assay wherein the solid phase substrate is immersed into an antibody labeled reaction mixture and relies on chemical binding of the antigen to the membrane. TODD is not concerned with filtering of the saliva. . . . Moreover, TODD is a one step method which teaches away from the multi-step methods as time-consuming. TODD is an assay with reaction times that vary from 15 minutes to several hours over a variety of different environmental conditions. . . . [The claimed invention] is a five minute, dry test, conducted at room temperature, which makes it very useful in a doctor's office or other clinical setting. The recited sample filter prevents the particulates from being trapped with the antibodies and antigen of interest. Thus, TODD does not anticipate nor suggest the claimed immunodiagnostic kit nor the immunodiagnostic method.

. . . .

The secondary reference, ARCHETTI, merely adds the concept of homogenization. . . .

. . . Homogenization does not filter out particulates but merely disperses them, thus it is not applicable to the instant invention.

The particulate removal step which can include pre-filtration or centrifuging is required to enable use of the “flow-through” assay design. . . . Thus, neither TODD nor ARCHETTI would have suggested nor motivated one of skill in the art to combine the elements of the invention as claimed to produce the resulting useful assay.

“In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant.” In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). The prima facie case must account for all the limitations of the claims. See General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1275, 23 USPQ2d 1839, 1840 (Fed. Cir. 1992) (“[E]ach claim is an entity which must be considered as a whole,” emphasis in original); In re Angstadt, 537 F.2d 498, 501, 190 USPQ 214, 217 (CCPA 1976) (“[W]e must give effect to all claim limitations,” emphasis in original).

In this case, we agree with Appellants that the examiner has not shown that the cited references would have made obvious the method and kit defined by the claims. The examiner has failed to account satisfactorily for at least one limitation in both the kit claims and the method claims. The kit claims require, among other things, a “filter to remove particulate matter from a saliva sample.” The examiner argues that this limitation is disclosed by Archetti, “because Archetti et al. specifically teaches the use of a filter when using saliva samples, i.e., cotton balls.” Examiner’s Answer, page 4.

This argument is unconvincing. First, Archetti does not teach the use of cotton balls to collect saliva samples; it teaches the use of cotton swabs for that purpose. In addition, the examiner has presented no evidence that either cotton balls or cotton swabs, when used to collect saliva, would perform as required by the claims, i.e., “to remove particulate matter from a saliva sample.” Therefore, the examiner has not shown that the claimed kit, including all its limitations, would have been obvious to a skilled artisan based on Todd and Archetti.

The method claims also contain limitations that are not taught or suggested by the cited references. The claimed method requires, among other things, “[s]potting the saliva filtrate or supernatant on to the immobilized antigen on the solid substrate,” and “reading the intensity of the label in less than 5 minutes.” The method disclosed by Todd suggests neither of these limitations. With respect to the time limitation, Todd carries out the assay for a minimum of fifteen minutes (e.g., column 7, line 11) and some cases, as long as overnight (column 7, lines 28-29). The examiner’s only attempt to address this limitation, as far as we can find, was to assert that “[d]ipstick assays and test strips are well known in the prior art which contain the time frame of 5 minutes.” Examiner’s Answer, page 11. However, the examiner cited no evidence to support this assertion, nor did she point to anything in the cited references that would have suggested the five-minute limitation.

In addition, the examiner has not adequately explained how Todd would have suggested spotting the saliva sample onto the immunoassay substrate. In the assay disclosed by Todd, the antigen is spotted onto the substrate, which is

then dried and blocked to prevent nonspecific binding. See, e.g., column 6, lines 41-51. The prepared substrate and the test sample are then added together to a test tube containing the labeling reagent. See column 7, lines 3-9. After incubation for fifteen minutes, the signal is read. Column 7, lines 10-15. The examiner has not adequately explained how Todd's method of adding both substrate and sample to a labeling solution would have suggested the claimed step of spotting a treated saliva sample onto an immunoassay substrate.

Summary

The examiner has not shown that the claims, considered as a whole, would have made obvious in view of Todd and Archetti. The rejections under 35 U.S.C. § 103 are reversed.

REVERSED

Sherman D. Winters)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
Toni R. Scheiner)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
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Eric Grimes)	
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Appeal No. 2001-1409
Application No. 09/044,214

Page 9

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